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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,567	01/27/2004	Akira Ohzu	001458.00041	9030
22907	7590	06/29/2005	EXAMINER	
BANNER & WITCOFF 1001 G STREET N W SUITE 1100 WASHINGTON, DC 20001			SUAREZ, FELIX E	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/764,567	OHZU ET AL.	
	Examiner	Art Unit	
	Felix E. Suarez	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. Claims 3-5 are objected to because of the following informalities:

In claim 3, the phrase " the fast gating capability does not have antecedent basis.

In claim 4, the phrase "the high-sensitivity two-dimensional photo detector" and the phrase "the fast gating capability" does not have antecedent basis.

In claim 5, the phrase "the delay time in shutter closure by the fast gating capability" and phrase "the high-sensitivity two-dimensional photo detector" does not have antecedent basis.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 1 is rejected under 35 U.S.C. 102(b) as being unpatentable over Bernstein et al. (U.S. Patent No. 6,066,295).

With respect to claim 1, Bernstein et al. teaches a remote particle counter in a laser radar apparatus,

wherein suspended fine particles forming aerosols in the atmosphere which are far away from the site (see col. 3, lines 27-39 and col. 4, lines 25-31) of laser emission are illuminated with laser light (see col. 3, lines 45-50), the resulting backward scattered light from the individual fine particles is detected as image (see col. 1, lines 36-39 and col. 5, lines 21-29), and the number and size distribution of the suspended fine particles are measured at a remote site (see col. 4, lines 2-8).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernstein et al. (U.S. Patent No. 6,066,295) in view of Dahl (U.S. Patent No. 5,298,905).

With respect to claim 2, Bernstein et al. (hereafter Bernstein) teaches all the features of the claimed invention, except that Bernstein does not teach comprising a pulsed laser generator, laser light emitting optics, scattered light collecting optics, a high sensitivity two-dimensional photo detector as a scattered

light detecting portion having a fast gating capability, and a control and measure system, and by which the scattered light due to laser application that comes from the individual fine particles in a limited atmospheric space a given distance away from the site of laser emission can be measured as an image.

But Dahl teaches a light detection and ranging (LIDAR) calibration or measuring apparatus. The calibration apparatus comprises a plurality of inputs coupled, for example, to photodetector(s) having field of view, input selector, sampler and analog-to-digital (A/D) converter, digital busses, time varying threshold sensitivity time control (STC) generator, threshold detector, digital control and timing generator, digital buss and interconnections.

Digital control and timing generator is coupled to photoemitter having field of view. Digital control and timing generator supplies one or more electrical pulses to Photoemitter. Photoemitter illuminates field of view with optical energy in response to these electrical pulses and also illuminates any target which may be present in field of view, giving rise to reflected optical signals (see Dahl; col. 6, lines 32-48).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bernstein to include a LIDAR calibration or measuring apparatus as taught by Dahl, because the LIDAR allows to control and measure scattered light (due to laser application) that comes from the particles in a limited atmospheric space; and the scattered light can be measured as an image by the photodetector.

With respect to claim 3, Bernstein teaches all the features of the claimed invention, except that Bernstein does not teach that, the fast gating capability is such that after the lapse of a certain time lag or delay time from laser emission, the high-sensitivity two-dimensional photo detector detects as image the scattered light signal intensity captured within a given duration of gate time, and by controlling said delay time and said gate time, the scattered light coming from the individual fine particles in a limited atmospheric space a given distance away from the site of laser emission can be captured as an image.

But Dahl teaches that a Digital control and timing generator is coupled to photoemitter having field of view. Digital control and timing generator supplies one or more electrical pulses to photoemitter. Photoemitter illuminates field of view with optical energy in response to these electrical pulses and also illuminates any target which may be present in field of view, giving rise to reflected optical signals (see Dahl; col. 6, lines 40-48).

Dahl also teaches that the Time/range gate latches provide an indication of the duration of the target detection signal (see Dahl; col. 10, lines 44-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bernstein to include a Digital control; a timing generator and a Time/range gate as taught by Dahl, because the Digital control is capable to control the timing generation pulses and the Time/range

gate is capable to provide an indication of the time duration of the optical detection signal.

With respect to claim 4, Bernstein teaches all the features of the claimed invention, except that Bernstein does not teach that, the image of the scattered light from the individual faraway fine particles in the atmosphere as measured with the high-sensitivity two-dimensional photo detector having the fast gating capability looks like either a dense or sparse cloud of spots, which are analyzed to determine the number and size distribution of the fine particles within the limited space of the atmosphere, the latter being determined by the brightness or intensity of the spots.

But Dahl teaches that the calibration apparatus comprises a plurality of inputs coupled, for example, to photodetector(s) having field of view (see Dahl; col. 6, lines 32-48).

Dahl also teaches that, photodetector(s) conveniently are essentially the same type as employed for infrared lidar technique (see Dahl; col. 7, lines 30-41).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bernstein to include a photodetector as taught by Dahl, because the photodetector of Dahl is essentially the same type as employed for infrared lidar technique; and the lidar technique is an alternative (see Bernstein; col. 3, lines 45-50) for a signature detection system, enabling the

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type, density, distribution, and/or quantity of airborne agent to be determined (see Bernstein; col. 4, lines 2-8).

With respect to claim 5, Bernstein in combination with Dahl teaches all the features of the claimed invention, and Bernstein further teaches that, the delay time in shutter closure by the fast gating capability of the high-sensitivity two-dimensional photo detector and the direction of laser emission are varied and controlled continuously and independently so as to provide information about the three-dimensional spatial distribution over a broad range of the number and size distribution of the fine particles in the atmosphere (see Bernstein; col. 2, lines 7-19).

With respect to claim 6, Bernstein in combination with Dahl teaches all the features of the claimed invention, and Bernstein further teaches that, the temporal changes in the spatial distribution of the number and size distribution of the fine particles in the atmosphere as obtained by controlling the delay time and the direction of laser emission are captured and analyzed.

### ***Conclusion***

#### ***Prior Art***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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Mocker et al. [U.S. Patent No. 5,394,238] describes a back-scattered radiation detector in an aircraft.

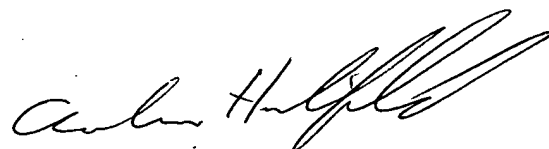
Wyatt. [U.S. Patent No. 6,490,530] describes an array of light scattering detector stations.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felix Suarez, whose telephone number is (571) 272-2223. The examiner can normally be reached on weekdays from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on (571) 272-2216. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9306 for regular communications and for After Final communications.

June 23, 2005

F.S.



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